This paper is illustrated by numerous drawings from injected and recent specimens.

March 3, 1842.

FRANCIS BAILY, Esq., V.P., in the Chair.

Major-General W. Morison, C.B., and Captain Owen Stanley, R.N., were balloted for, and severally elected into the Society.

A paper was read, entitled, "On the Diurnal Temperature of the Earth's Surface, and the discussion of a simple Formula for ascertaining the same." By S. A. Drach, Esq. Communicated by John Lee, Esq., LL.D., F.R.S.

The author observes, in his introductory remarks, that during a period of twenty-four hours the quantity of calorific rays emitted from the sun, and falling on the exposed atmosphere of the earth, is proportional to one day's area as swept by the radius vector divided by the square of that radius; or is proportional to the true angular motion for that day; which is equivalent to substituting the declinations resulting from the true longitudes for those deduced from the mean ones at mean noons. On the arrival of the rays at the superior limit of our atmosphere, they undergo refraction, absorption, and difficulty of conduction; and when arrived at the surface of the earth, they suffer radiation and reflection; the absorption alone, at a vertical distance, amounting to upwards of one-fourth. The maximum sensible heat, he proceeds to observe, appears to follow the sun in its diurnal revolution, being similar, in this respect, to the point of maximum tidal height of the ocean; hence he applies the term *thermal establishment* to the retardation of the effects caused by atmospherical conduction and localities, in the same manner that the term *tidal establishment* has been employed to denote the local constant by which the astronomical effects on the tides are delayed.

The tables annexed to the paper assume that the degree of the thermometer is proportional to the cosine of the sun's meridian altitude, commencing with that on the day of observation, and ending with the altitude thirty days previously. After explaining the formation of these tables, and detailing the conclusions derivable from them, the author gives a sketch of the perturbing causes, such as oceanic evaporation, mountain ranges, and other local influences; he then enters into a discussion of the mathematical expression for the daily heat; and he concludes with some observations on the theories of temperature and isothermal lines, as affected by the electrical and magnetical conditions of the earth, dependent on its rotation on its axis.

March 10, 1842.

SIR JOHN WILLIAM LUBBOCK, Bart., V.P. and Treas. in the Chair.

Cuthbert William Johnson, Esq., and Joseph Toynbee, Esq., were balloted for, and severally elected into the Society.

The following papers were read, viz.—

1. "Meteorological Observations, taken in conformity with the Report drawn up by the Committee of Physics, including Meteorology, for the guidance of the Antarctic Expedition; as also for the fixed Magnetic Observatories, at the Magnetic Observatory, Ross-Bank, Van Diemen's Land, for July and August 1841." Communicated by the Master-General of the Ordnance.

2. "Meteorological Register kept at Port Arthur, Van Diemen's Land, during the Year 1839." By Deputy Assistant Commissary-General Lempriere. Communicated by Captain Beaufort, R.N., F.R.S.

3. A paper was in part read, entitled, "Contributions to the Chemical History of the Compounds of Palladium and Platinum." By Robert Kane, M.D., M.R.I.A. Communicated by Francis Baily, Esq., V.P.R.S.

The Vice-President in the Chair announced that the Council had determined to propose to the Society the ejection of Mr. William John Bankes, F.R.S.